

Digital Leadership in Marginalized Islamic Education: Evaluating Technological Transformation and Change Management in Periphery Madrasah

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ABSTRACT

Objective: This study evaluates the effectiveness of digital leadership in directing educational transformation at Islamic educational institutions with limited resources. **Method:** Using Robert E. Stake's Countenance evaluation model within a qualitative-evaluative design, this research investigates how school leaders optimize digital infrastructure and mitigate psychosocial barriers at peripheral institutions. Data were collected through in-depth interviews, non-participant observation, and document analysis involving 16 purposively selected participants, including the madrasah principal, teachers, and students at a model Madrasah Aliyah Negeri (MAN) in the marginal region of Jambi Province. **Results:** The findings reveal that the visionary role of the madrasah principal achieved optimal congruence across the antecedents (initial conditions), transactions (processes), and outcomes (results) stages. Technological marginality was overcome through three strategic pillars: institutionalizing a formal "Digital Madrasah" blueprint in annual planning, prioritizing targeted resource allocation to achieve an ideal student-to-device ratio, and implementing a collaborative-inspirational leadership pattern. Psychosocial barriers, such as technophobia among senior educators, were mitigated through a humanist-religious peer-mentoring framework and a symbolic reward system. **Novelty:** This study extends change management theory by conceptualizing Collaborative-Supportive Digital Leadership, demonstrating that cultural-emotional readiness and strategic networking are prerequisites for sustainable educational technology integration at marginal institutions.

INTRODUCTION

The global education world is currently facing a massive wave of digital disruption that forces all learning institutions to radically reconstruct their conventional governance systems. The existence of cutting-edge technologies such as artificial intelligence and big data has transformed the international pedagogical landscape; however, this global phenomenon leaves a real digital marginality gap for peripheral institutions. In Indonesia, this universal challenge manifests specifically within the Madrasah Aliyah ecosystem, which is required to make cultural leaps to maintain educational relevance amid limited geographic accessibility. The response to this technological modernization is highly dependent on the managerial capabilities of institutional leadership, which must navigate contemporary civilizational transition processes without sacrificing the foundational values of traditional religious spirituality.

A model Madrasah Aliyah Negeri (MAN) located in the peripheral region of Jambi Province represents a real example of institutional struggle in meeting national educational digitalization demands. As a state Islamic educational institution that has

proactively declared itself a "Model Digital Madrasah," this institution is confronted with an acute operational contradiction: limited financial autonomy and fundamental technology infrastructure instability in a marginal area. Core problems in the field include the low functionality of computer laboratory facilities, high psychological resistance from senior teacher groups, and fragmented digital literacy curricula not yet systematically integrated. These dilemmatic conditions create stagnation in learning output quality, necessitating visionary leadership intervention capable of converting structural limitations into sustainable cultural innovation opportunities.

Previous literature has examined these dynamics, such as Qiumeng et al. (2025), who highlighted the urgency of top leadership support, and Coleman dan Reames (2020), who focused on the importance of optimizing school external partnership networks. However, M. Li (2025) showed that authoritarian leadership models in rural areas often become the main factor hindering the adoption of teaching technology innovation. On the other hand, Jamil et al. (2025) identified socio-cultural ideological clashes at religious institutions that consistently reject the penetration of Western digital culture embedded in modern devices. A clear research gap in contemporary scientific literature is the absence of in-depth studies on digital leadership models capable of reducing cultural-religious resistance at marginal institutions.

The urgency of this research is based on the pressing need to formulate adaptive management formulas for traditional Islamic educational institutions to avoid the risk of academic quality degradation. Investigation of this phenomenon is highly relevant today as post-pandemic technological acceleration demands inclusive digital literacy fulfillment without leaving geographic discrimination for peripheral areas. The primary objective of this exploratory research is to explicitly analyze the effectiveness of the madrasah principal's leadership governance in mitigating psychosocial and technical barriers to learning digitalization. Through a descriptive qualitative approach, this study is directed to answer three core research questions:

1. How effective is visionary leadership in optimizing the madrasah's limited digital infrastructure?
2. How does inspirational leadership strategy mitigate the psychosocial barriers of madrasah members?
3. How does the external collaborative leadership pattern ensure technology sustainability?

Conceptually, the findings of this research provide a relevant scientific contribution in enriching the treasury of Islamic education management, particularly through strengthening ideas regarding humanist and contextually oriented digital-religious leadership models. On a practical level, this study offers strategic value in the form of operational guidelines for policymakers at the Ministry of Religious Affairs in designing digital competency enhancement programs that still consider the socio-cultural characteristics of madrasahs. The implementation of research results is expected to encourage the formation of collective, sustainable mentoring schemes that can be

replicated across various marginal madrasahs at the national level. Thus, the originality of this research affirms that geographic limitations need not be the primary barrier to improving educational institution quality if managed through visionary, adaptive, and collaborative transformational leadership.

RESEARCH METHOD

Research Design

This research employs a qualitative evaluative design [5]. This approach was chosen because the researcher aims to provide a systematic assessment of the effectiveness, quality, and utility of digital leadership management in a formal educational setting. Unlike purely descriptive qualitative research, this evaluative research not only captures phenomena but also compares field realities with established standards or success criteria [6]. This evaluation framework is focused on uncovering the problematic implementation of the madrasah principal's digital leadership directly from the perspective of the actors involved in the educational ecosystem.

Participants and Research Ethics

There were 16 participants in this research, determined through purposive sampling, a purpose-based sample selection method to obtain rich and specific information related to madrasah digitalization evaluation. Inclusion criteria required informants to be directly and actively involved in policy-making processes, digital curriculum implementation, or as active users of technology facilities at the madrasah for at least the past year; exclusion criteria applied to madrasah members not directly involved in the digital learning ecosystem. Based on these calculations, the definitively selected research subjects include: 1 Madrasah Principal as the primary policy-maker, 8 Teachers (representing variations in senior and junior teacher backgrounds), and 7 active Students utilizing computer laboratory facilities. The researcher applied ethical standards through informed consent procedures to guarantee participants' rights to voluntarily withdraw. Data confidentiality is ensured through identity anonymization using special coding, while all information is stored in a secure database. This step ensures that data is used only for academic purposes while upholding principles of informant protection.

Data Collection Methods

Field data collection was conducted comprehensively through a combination of three main techniques: in-depth interviews, observation, and documentation, to ensure the depth of information collected. In-depth interviews were conducted in stages to explore strategic visions, motivations, and psychosocial-technical barriers from the perspectives of the madrasah principal and teachers personally. The observation technique was applied in a non-participant manner by directly observing the physical condition of the laboratory, the use of 70 computer units, internet network stability, and the dynamics of digital-based pedagogical interactions in classrooms. Meanwhile, the documentation technique was used to collect authentic documents such as the Annual

Work Plan (RKT), records of the technology information facility inventory list, and cooperation files with external parties.

Research Instruments

The main instrument in this research was the researcher themselves, supported by auxiliary instruments consisting of semi-structured interview guides, observation sheets, and document recording matrices. The semi-structured interview guide was designed flexibly to stimulate in-depth descriptive responses from informants without losing focus on the evaluated indicators. The development of these instruments was derived directly from the digital education management conceptual framework. Instrument validation was conducted through expert assessment mechanisms and initial readability testing on subjects outside the main informants to ensure content validity, clarity of sentence wording, and operational functional accuracy in the field.

Data Analysis Methods

Data analysis applied Robert E. Stake's (1967) Countenance evaluation model, which dissects programs through description and judgment matrices. Operationally, this model divides data analysis into three main chronological stages: antecedents (initial conditions or context before digitalization), transactions (process of interaction and implementation of digital leadership in the field), and outcomes (final results or real impacts produced by digitalization). Textual data obtained from interview transcripts, field notes from observation, and document recordings were analyzed thematically to conduct rigorous coding, data categorization, discovery of key themes, and in-depth interpretation of meaning in order to evaluate the degree of congruence between the madrasah's strategic plans and actual implementation realities.

To ensure the degree of trustworthiness of qualitative data, this research applied four main criteria—credibility, transferability, dependability, and confirmability—through member checking, peer debriefing, and triangulation techniques. Triangulation was conducted doubly, including source triangulation (comparing data between the madrasah principal, teachers, and students) and method triangulation (cross-checking in-depth interview data with observation findings and documentary evidence). Research ethics were upheld with discipline through written informed consent signed by all participants before data collection began, guaranteed identity confidentiality (anonymity), and assurance of informant private data protection throughout the research.

RESULTS AND DISCUSSION

Result

Evaluation of the Effectiveness of Visionary Leadership in Optimizing the Madrasah's Limited Digital Infrastructure

The presentation of findings in this sub-section captures three evaluative stages: antecedents (initial conditions of limitations), transactions (managerial implementation processes), and outcomes (impacts of infrastructure utilization). Based on data reduction

results from the field, the effectiveness of the madrasah principal's visionary leadership in overcoming technological marginality is revealed through three main finding dimensions:

Initial Conditions of Resource Limitations and Long-Term Vision Legality (Antecedents)

At the antecedents stage, the madrasah principal faced the reality of hardware limitations and initial skepticism among madrasah members toward the idea of digitalization. The madrasah leader carried out visionary intervention by establishing a strong ideological and administrative foundation through the Annual Work Plan (RKT). This initial step is clearly recorded in the following series of in-depth interview excerpts with participants:

"The most crucial initial step for me was aligning perceptions among the deputy principals and field coordinators so they shared a common understanding of the urgency of digital literacy, so that budget limitations would not be an excuse for passivity." (Interview P1)

The visionary policy direction of the top leadership was immediately captured operationally by curriculum management as a basis for compiling academic work programs, as confirmed in the quote below:

"The Madrasah Principal often emphasizes the importance of using digital platforms in early-year coordination meetings. This policy is considered a formal 'compass' for us teachers in developing learning tools that are no longer entirely paper-based." (Interview P4)

In order to connect the verbal commitment of the leadership with the mental readiness of the implementers at the class level, the madrasah principal took a structured persuasive approach, which was strengthened by the following teacher statement:

"We teachers see the principal's instructions as a guarantee of legality. He incorporated the 'Digital Madrasah' target into official school documents so we have a clear legal framework to begin transitioning to digital media." (Interview P9)

This visionary policy pattern not only influences educators, but also fosters positive expectations among students, as expressed honestly by student informants:

"Since the beginning of the year, the principal already announced on the assembly ground that our madrasah would transition to a digital system. We became very enthusiastic because we felt our school could compete with advanced schools in big cities." (Interview P15)

The interview excerpts above correspond fully with the researcher's documentary study of the Madrasah Aliyah's Annual Work Plan (RKT) files, in which explicit points were found allocating programs for the development of madrasah information systems and e-learning integration into the local curriculum. These administrative documents were then physically reinforced based on the researcher's field observations capturing the presence of banners, digital literacy slogans, and healthy technology use educational banners in the madrasah's public areas.

Managerial Transactions: Procurement and Responsive Maintenance of Digital Devices (Transactions)

Entering the transactions stage, evaluation focused on how the principal's vision was translated into operational actions for the periodic procurement and maintenance of technology infrastructure amid budget limitations. This managerial transaction dynamic is depicted through the following statements from field informants:

"Our initial annual budget focus was directed toward fulfilling computer units in the laboratory so that the ratio between students and devices remains ideal, because digital literacy only develops when madrasah members have the tools in their hands directly." (Interview P1)

This visionary policy pattern not only influences educators, but also fosters positive expectations among students, as expressed honestly by student informants:

"The Madrasah Principal is very responsive to the need for repairs to damaged devices to maintain smooth laboratory use. This logistical support provides us with the security to maintain the daily performance of the digital infrastructure." (Interview P6)

The presence of digital tools resulting from this responsive policy is recognized by teachers as the main stimulus in changing the teaching style from conventional to multimedia-based:

"Previously we had difficulty finding projectors, but the principal gradually facilitated the procurement of projectors in each classroom and strengthened the internet signal in school corridors so that digital materials from the laboratory could be widely accessed." (Interview P12)

The direct impact of this procurement transaction is felt in real terms by students when they carry out practical learning activities in the laboratory:

"We no longer need to compete for computers as last year. The computer lab is now very comfortable, clean, cool, and has many computers so we can focus on learning to design and complete assignments without distraction." (Interview P14)

To verify the authenticity of these informant statements, the researcher conducted non-participant observation in the computer laboratory and found physical evidence of 70 computers in ready-to-use condition, neatly arranged and clean. The researcher also recorded through documentary study of the Madrasah Facility and Infrastructure Inventory Book, which showed a graph of increasing quantities of computer devices, classroom projector installations, and gradual increases in internet bandwidth capacity over the past two budget years.

Evaluation: Institutional Independence and Enhancement of Digital Culture (Outcomes)

At the final stage of Stake's evaluation model (outcomes), the visionary intervention and digital infrastructure procurement transactions culminated in results in the form of the madrasah's institutional independence in independently operating digital technology. Testimony about the success of these results was described by the following participants:

"The main target of the availability of these facilities is independence. The output is real; now our madrasah is 100% self-sufficient in conducting computer-based digital examinations without having to borrow facilities from other schools." (In-depth interview, P4)

This institutional independence ultimately succeeded in eroding the stigma of marginality and raising the reputation of the madrasah in the eyes of the surrounding socio-cultural community:

"The success in independently organizing digital-based examinations has directly increased our confidence before students' parents and the wider community. Madrasah Aliyah is now seen as a technology pioneer madrasah in this region." (In-depth interview, P8)

This change in institutional climate also has a positive impact on increasing the efficiency of administrative service performance in the madrasah administration department:

"The strengthening of internet and computer infrastructure from the principal pushed us to fully migrate to a digital administration system, which made the process of student document services much faster." (In-depth interview, P7)

Students as the final beneficiaries feel academically benefited by the creation of a supportive digital learning ecosystem in the madrasah:

"We feel very fortunate because we are accustomed to using computers and stable internet at school. This makes us no longer awkward when facing national examinations or competing outside of school." (In-depth interview, P16)

The findings reveal that the effectiveness of the madrasah principal's visionary leadership is achieved through fulfilling strong congruence between the antecedents, transactions, and outcomes aspects. Financial and geographic resource limitations were overcome not through massive instant financing, but through managerial precision in laying the legal foundation of vision (RKT), sharpness in prioritizing operational procurement budgets (ideal device-student ratio), and the success of making the computer laboratory a driver of institutional independence. These evaluation results affirm that visionary leadership acts as a key element that transforms physical infrastructure limitations into productive digital cultural excellence for all madrasah members.

Evaluation of Inspirational Leadership Strategy in Mitigating Psychosocial Barriers of Madrasah Members

The presentation of findings in this sub-section focuses on the madrasah principal's tactics in reducing technophobia and demotivation that temporarily affected some madrasah members. Evaluation is directed to assess the congruence between the initial psychological conditions of madrasah members (antecedents), the dynamics of the humanist approach taken by the leadership (transactions), and the resulting behavioral changes and digital work climate (outcomes).

Initial Conditions of Psychosocial Barriers in the Madrasah Environment (Antecedents)

In the early phase before the digitalization program was massively accelerated (antecedents), the biggest barrier that emerged was not the absence of computers, but the mental readiness of madrasah members. Based on informant accounts, psychological anxiety was found among senior educators who felt threatened by the presence of new technology devices. This inter-generational socio-cultural anxiety reality was described frankly by teacher representatives:

"Honestly, at first those of us who are already senior felt very inferior and anxious when the madrasah principal required the use of e-learning. There was psychological fear of pressing the wrong button or damaging equipment, so in the early stages there was subtle rejection from us because we felt too old to learn computers." (In-depth interview, P2)

These personal fears have the potential to create demotivating barriers if not promptly intervened through appropriate leadership approaches. The dynamics of these early-stage psychosocial barriers are not only felt by functional teachers but also by administrative staff in the service department, as revealed by the educational informant below:

"We in the administrative section initially felt pressured because we were accustomed to working manually with ledgers, then suddenly had to switch to a cloud application system. The main barrier was our mentality not yet ready to step out of our comfort zone." (In-depth interview, P8)

Inspirational Transactions: Humanist-Religious Approach and Appreciation Stimulation (Transactions)

Entering the implementation interaction stage (transactions), the madrasah principal applied an inspirational leadership pattern not based on rigid top-down instructions, but using a humanist and religious affective approach. The principal performed a re-framing that mastering technology is part of the moral-religious responsibility (amanah) to advance the community, while also providing rewards for teachers willing to try. These psychosocial transaction tactics touching motivational aspects were described directly by the madrasah principal:

"I was aware of their anxiety, so my strategy was to touch their emotional and religious side in routine meetings, emphasizing that technology is a tool to help in the worship of teaching, not a replacement for the teacher's role. We also gave special certificates of appreciation for innovative teachers to spark healthy competitive spirit." (In-depth interview, P1, confirmed with P5 and P11)

The madrasah principal's approach of positioning himself as a master motivator has proven effective in reducing teachers' psychological stress and transforming fear into pedagogical confidence. This mental transformation process is confirmed by the account of one young teacher who witnessed the change in the school's work climate firsthand:

"The principal is very good at igniting our enthusiasm through verbal praise in forum meetings. He never scolded teachers who made mistakes operating laptops, but instead instructed us younger teachers to accompany seniors without being condescending, so the

barrier of fear disappeared and was replaced by a culture of mutual assistance." (In-depth interview, P3)

Evaluation Results of Behavioral Change of Madrasah Members (Outcomes)

At the final stage of Countenance evaluation (outcomes), the entire series of motivational transactions architected by the inspirational leadership produced results in the form of behavioral change and the formation of an inclusive digital culture. The stigma of technology fear was completely eroded, directly impacting student learning enthusiasm in class:

"Now the learning atmosphere in class is very exciting because our supervising teachers, even the elderly ones, are already skilled at displaying learning videos through projectors and assigning tasks through applications. We are more engaged and motivated to actively learn in the computer laboratory." (In-depth interview, P12, confirmed with P13 and P16)

The final documentary study of teacher activity log percentages on the madrasah e-learning platform showed a very sharp increase graph, with 90% of teachers actively uploading digital teaching modules independently. This administrative data synchronizes fully with the researcher's field observations directly seeing classroom situations where senior teachers are no longer awkward operating multimedia devices, and the creation of harmonious mentoring interactions between young and senior teachers in the madrasah's internal practitioner community.

The findings reveal a high degree of congruence between efforts to mitigate psychosocial barriers and the achievement of digital culture. The madrasah principal's inspirational leadership strategy proved successful in breaking through resistance not through structural coercion, but through adaptive motivation manipulation. By integrating socio-cultural-religious values (ta'awun and amanah) into the technology ecosystem and institutionalizing a culture of appreciation (certificates of appreciation), the principal successfully transformed antecedent conditions filled with technophobia into outcomes in the form of a supportive, inclusive, and independent digital work environment.

Evaluation of External Collaborative Leadership Pattern in Ensuring Technology Sustainability

This evaluation traces operational consistency from the initial conditions of dependence on internal resources (antecedents), formal cooperation mobilization with external networks (transactions), to the realization of guarantees of stability and sustainability of the technology ecosystem (outcomes).

Initial Conditions of Limited Internal Expert Capacity of the Madrasah (Antecedents)

In the antecedents phase, the Madrasah Aliyah experienced constraints in the form of limited operational technical expertise capacity and insufficient independent budget if relying solely on routine government assistance funds. The madrasah principal realized that without external network intervention, technology acceleration at peripheral madrasahs would stagnate due to dependence on one or two madrasah operators. The principal described this initial limitation reality:

"We are fully aware of our internal human resource limitations and our funding autonomy. Therefore, from the beginning I took the initiative to proactively seek and build bridges of cooperation with outside parties to accelerate technology knowledge transfer and maintain system stability." (In-depth interview, P1)

The initial state of the institution's technical helplessness was also acknowledged by representatives of the school committee, who were worried about the fate of the digital equipment that had been purchased by the madrasah if fatal damage occurred in the future:

"At the beginning of the program, parents of students were doubtful whether the expensive computers in the lab could last long or would be neglected because there was no expert technician to regularly maintain them. The principal then convinced us through a concrete external collaboration plan." (In-depth interview, P5)

Collaborative Transactions: Mobilization of Formal Cooperation Agreements and Technical Guidance (Transactions)

Entering the implementation interaction stage (transactions), the madrasah principal translated the collaborative approach into legally binding actions in the form of Memoranda of Understanding (MoUs) with local internet service providers and independent technology training institutions. This concrete step was taken to bring in guest instructors and expert technicians periodically into the madrasah:

"The principal was very proactive in establishing formal partnerships. He successfully engaged external technicians and guest instructors to provide short technical guidance directly at school, so our administrative staff and operators could learn directly from practitioners." (In-depth interview, P10)

The principal's aggressive-collaborative nature in expanding external partnerships has been directly felt by the supervising teachers, who now receive guaranteed technical assistance when operating digital media in the classroom without worrying about connectivity issues:

"The cooperation with the local internet provider initiated by the principal really saved our learning activities. When there were server problems or slow networks, the external technical team immediately responded with repairs without disrupting the rhythm of student examinations." (In-depth interview, P6, confirmed with P11)

Evaluation Results of Digital Technology Ecosystem Sustainability (Outcomes)

The external collaborative leadership pattern successfully secured the madrasah's technology future sustainably. The madrasah successfully broke free from the shackles of geographic marginality through guarantees of technology transfer and financial independence jointly supported by the committee and corporate partners:

"We feel very comfortable studying here because the internet is always smooth and the computers rarely break down. If there is damage, it is immediately repaired the next day by the school's regular technician, so our design assignments are never left unfinished." (In-depth interview, P13, confirmed with P14 and P16)

The findings reveal that the effectiveness of the madrasah principal's collaborative leadership is marked by the existence of full congruence between recognition of internal

limitations (antecedents), aggressiveness in binding external legal partners (transactions), and guarantees of long-term operational stability (outcomes). This collaborative strategy proves that technology sustainability at marginal schools is not determined by the size of the internal budget, but by the leader's ability to position the institution within mutually beneficial external ecosystem networks.

Discussion

Resonance of Visionary Leadership: Breaking the Boundaries of Marginality Through Contextual Digital Infrastructure Governance

The significance of this study's main findings proves that the effectiveness of the madrasah principal's visionary leadership in peripheral areas is determined by the ability to convert structural limitations into measurable operational policies through the institutionalization of formal vision. The madrasah principal's success in formulating strategic plans contained in the Annual Work Plan became the main foundation for optimizing the ideal ratio between technology device availability and the number of student needs. These evaluation results directly answer the research objective regarding the importance of the presence of an accommodative leader figure in designing information technology transformation blueprints in stages.

Theoretically, this success phenomenon strengthens the essence of Bass's Transformational Leadership Theory, which states that a leader's intellectual stimulation and inspirational motivation are the main determinants in driving organizational change. This finding also confirms [Olaopa \(2025\)](#) study affirming that top leadership's political commitment acts as an anchor for smooth technology innovation adoption at educational institutions. However, these research results diametrically contradict the conclusions of [van der Noll and Saroglou \(2015\)](#) in Germany, who found that religion-based educational institutions tend to show persistent ideological resistance to digital culture penetration. This contradiction reveals a positive anomaly at the Madrasah Aliyah, where religious values were architected as a catalyst for modernization acceleration.

This transformation mechanism can occur because the madrasah principal applied a cultural re-framing strategy by shifting the technology narrative from merely a secular tool to an instrument supporting madrasah members' pedagogical socio-cultural worship [9]. Through communicative leadership [10], the principal integrated digitalization targets into the madrasah's legal documents so that all stakeholders have a collective responsibility to support facility financing [11]. The systematic impact of this mechanism's operation was the birth of absolute institutional independence that eliminated the chronic dependence of marginal madrasahs on urban school facilities during national examinations [12].

Previous studies that explored similar phenomena, the managerial patterns in this madrasah demonstrate tactical similarities with [Waluyo \(2023\)](#) findings regarding the importance of flexibility in managing school operational budgets. However, this study offers a different perspective from [Gansauer dan Haggerty \(2024\)](#) study, which stated that geographic limitations in rural areas consistently correlate with failures in

information technology infrastructure governance. The fundamental difference lies in the madrasah principal's ability to consistently prioritize procurement, ensuring the 70-unit ready-to-use computer requirement is met. This scientific dialogue emphasizes that financial marginality can be effectively eliminated if institutions are guided by focused and sustainable strategic planning.

Theoretically, these findings successfully expand the scope of Digital Leadership Theory [15] by adding the Religious-Contextual Enabler dimension as an important moderation variable in managing technology transformation at traditional Islamic educational institutions [4]. Practically, this research recommends a concrete operational formula for policymakers at the Ministry of Religious Affairs to mandate the standardization of integrated digitalization-based RKT preparation at all marginal madrasahs. Local governments are also advised to allocate special tactical funds for IT device maintenance of at least fifteen percent of the total operational budget to ensure the computer lifecycle in laboratories.

Humanist Mitigation of Psychosocial Barriers: Transforming Technical Gaps into Inclusive Inspirational Leadership

This research proves that the success of madrasah members' digital literacy process is highly dependent on the madrasah principal's capacity to reduce technophobia through a personal approach. Deep interpretation of these findings shows that the presence of cutting-edge infrastructure will lose its functional relevance if not accompanied by mental readiness and intrinsic motivation from educators. These evaluation results directly realize the research objective regarding formulating adaptive leadership strategies in bridging the intergenerational competency gap within school organizations.

Theoretically, this finding confirms Greenleaf's Servant Leadership Theory, which emphasizes that a leader's primary function is to facilitate personal and professional growth of subordinates through deep social empathy [16]. This phenomenon also reinforces the findings of [Munandar et al. \(2025\)](#), which state that the efficacy of traditional Islamic leadership increases significantly when using an affective approach based on institutional family values. However, this finding critically contradicts [Zhang, Yang, and Zheng \(2026\)](#) research, which assumes that teacher technology mastery can only be accelerated through instructive-systematic technical training. This scientific contradiction proves that psychosocial condition recovery is an absolute prerequisite that precedes instructional digital competency transfer.

This new cultural internalization mechanism can occur because the madrasah principal adopts the principle of intellectual stimulation combined with local socio-cultural and religious wisdom [19], [20], such as the principle of ta'awun or Islamic mutual cooperation. Through informal discussion forums and peer mentoring, the madrasah principal assigns junior teachers to mentor senior colleagues without giving the impression of superior patronage. The psychological impact of this humanistic transaction is the disappearance of feelings of inferiority among senior teachers when

interacting directly with multimedia learning devices in the classroom. The positive domino effect triggers an escalation in teachers' digital engagement, reaching 90 percent on e-learning platforms, which in turn boosts students' enthusiasm for interactive learning.

Several previous studies have shown a similar pattern; these findings demonstrate tactical alignment with [Issah \(2018\)](#) analysis of the importance of emotional comfort-based change management. However, the mitigation pattern in this peripheral institution offers a different perspective from the conclusions of [Wójcik dan Dmochowska \(2025\)](#) in rural South Asia. Their research found that the uncertainty of digital culture consistently leads to persistent passive rejection from conventional teachers due to weak supervision. This fundamental difference occurred because the madrasah principals in the research locations were able to integrate a symbolic incentive system in the form of award certificates, effectively maintaining the rhythm of teacher motivation.

Theoretically, these findings successfully expand the treasury of Educational Change Management Theory by giving birth to the concept of Collaborative-Supportive Digital Leadership, which places emotional readiness as the foundation of organizational transformation [23], [24]. Practically, this study recommends an operational formula for madrasah principals to institutionalize the internal "Digital Ambassador" practitioner community tasked with providing periodic clinical technology mentoring. The self-training curriculum structure must also be realistically redesigned with a seventy percent portion of independent practicum to erode the technical anxiety of educators.

Aggressiveness of External Partnerships: Securing the Future of the Technology Ecosystem Through Sustainable Collaborative Networks

This research reveals that the sustainability of the technology ecosystem at peripheral institutions is determined by aggressive collaborative leadership patterns in building cross-sectoral partnerships with outside parties. Deep interpretation of these findings shows that limited madrasah autonomous budget is not an absolute barrier to maintaining digitalization lifecycle if leadership can mobilize external support networks. These evaluation results directly answer the research objective regarding finding strategic formulas to secure the operational stability of hardware and long-term internet power supply.

Theoretically, this finding confirms Barney's Resource-Based View (RBV) Theory, which states that an organization's competitive advantage is born from the leader's ability to dynamically combine internal capital with external capabilities [25], [26]. This phenomenon also reinforces [Al-Filali et al. \(2023\)](#) study affirming that building strategic alliance networks is very effective in overcoming financial deficits of educational institutions in marginal areas. However, this finding critically debates [Dlamini dan van der Vyver \(2019\)](#) conclusion, which assumes that resolving technical barriers at rural schools always requires direct central government budget intervention. This scientific contradiction proves that the aggressiveness of local collaborative leadership can create governance independence without having to depend on national bureaucratic schemes.

Compared with previous research, the findings at the state Islamic high schools (Madrasah Aliyah) where the study took place align with Hassan's (2021) Public-Private Partnership concept, which emphasizes the importance of multi-stakeholder collaboration in strengthening the digital education ecosystem [29], [30]. Partnerships with technology providers, community support, and the involvement of various stakeholders have been shown to accelerate the digital transformation of madrasahs. However, these findings differ from those of [Stumbrienė et al. \(2024\)](#), who stated that technology transfer in regional schools is often unsustainable due to low internal human resource capacity. In this study, sustainability is supported by a leadership strategy that emphasizes systematic knowledge transfer [32], [33]. Madrasah principals require administrative staff and related personnel to be directly involved in every technical assistance session, resulting in knowledge replication and internal competency enhancement. These findings demonstrate that the success of digital transformation depends not only on external support but also on the organization's ability to internalize and develop knowledge sustainably.

Theoretically, these findings enrich the treasury of Education Management through strengthening the concept of Open-Ecological Educational Leadership—a leadership model that places the ability to build strategic networks and partnerships as the main pillar of school innovation sustainability. Practically, this study offers operational recommendations for madrasah principals to draft Memoranda of Understanding (MoUs) that not only focus on facility provision, but also contain clauses for periodic mentoring and technical guidance, at least three times per semester. In addition, madrasah committees need to initiate sustainable funding mechanisms, for example through tactical fund allocation from community self-help sources to support technology device maintenance and updates [34], [35]. With structured collaboration, continuous knowledge transfer, and adaptive funding support, the madrasah's digital ecosystem is believed to be able to develop more independently, resiliently, and sustainably.

CONCLUSION

Fundamental Finding: Based on the overall results of the analysis, this research concludes that the success of digital transformation at the state madrasah aliyah that served as the research location is greatly influenced by the madrasah principal's ability to synergistically integrate strategic vision, a humanist approach, and the strengthening of external partnerships. These findings show that limitations in financial resources or geographic position in peripheral areas do not always become the primary barrier to improving the quality of religious educational institutions. The success in reducing psychosocial barriers among senior teachers and optimizing computer laboratory utilization became real indicators of leadership effectiveness in managing organizational work culture change. In this context, the transformational madrasah principal figure proved capable of directing the institution from an initial condition marked by technology anxiety toward a more independent, productive, and competitive digital

ecosystem. **Implication:** Furthermore, the findings of this research provide important theoretical implications for the development of Islamic education management. The research results affirm that the success of technology adoption at religious educational institutions is not only determined by infrastructure availability, but also by the ability to integrate digital competencies with spiritual values and organizational culture. In other words, the emotional and psychological readiness of madrasah members is a foundation that needs to be built before massive technology investment is carried out. On this basis, this research recommends that policymakers at the Ministry of Religious Affairs strengthen regulations regarding the development of community-based digital literacy. At the level of educational units, madrasah principals also need to allocate adequate technology maintenance budgets to ensure the sustainability of digital device utilization in the learning process and institutional governance. **Limitation:** The main limitation of this research lies in the single locus focus in a peripheral area with very specific religious socio-cultural characteristics, so the degree of external validity cannot yet be universally generalized. **Future Research:** Based on these limitations, logical future suggestions demand that subsequent researchers conduct in-depth investigations into the effectiveness of artificial intelligence platform implementation in curriculum governance. The next tactical step that must be taken is to conduct large-scale comparative studies between marginal madrasahs and urban schools to comprehensively map digital literacy disparities. These continuous scientific efforts are expected to produce a modern educational management blueprint that is adaptive to the dynamics of global disruption currents at the national level.

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